

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Christian Block et al.
Serial No. : 10/526,278
Filed : March 1, 2005
Title : CIRCUIT ARRANGEMENT

Art Unit : 2836
Examiner : Scott Allen Bauer
Conf. No. : 6665

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PRE-APPEAL BRIEF REQUEST FOR REVIEW

We respectfully request that a panel of Examiners review the rejections made by the Examiner because of the deficiencies discussed below.

I. Rejections

Independent claim 22 was rejected under §103 over U.S. Patent No. 5,521,561 (Yrjöla) in view of U.S. Patent No. 6,822,295 (Larson).

The dependent claims were rejected under §103 are as follows. Claims 23, 24, 26 to 29, 31 and 41 to 43 were rejected over Yrjöla in view of Larson; claim 25 was rejected over Yrjöla in view of Larson and Mizutani; claim 32 was rejected over Yrjöla in view of Larson and U.S. Patent No. 5,122,921 (Koss); claim 30 was rejected over Yrjöla in view of Larson and U.S. Patent No. 4,977,357 (Shrier); claims 33, 35 and 39 were rejected over Yrjöla in view of Larson and U.S. Patent No. 6,272,327 (Kurchuk); claim 34 was rejected over Yrjöla in view of Larson and JP02000134945 (Toshiba); claims 36 to 38 were rejected over Yrjöla in view of Larson, Kurchuk and U.S. Patent No. 5,276,422 (Ikeda); claim 40 was rejected over Yrjöla in view of Larson and U.S. Patent No. 6,072,993 (Trikha); and claim 44 was rejected over Yrjöla in view of Larson and U.S. Patent Publication No. 2002/0080537 (Landy).

II. Questions For Review

We respectfully request the panel to review the following issue: whether sole independent claim 22 is obvious over Yrjöla in view of Larson. We reserve the right to expand the issues or to present new issues when filing an appeal brief.

III. §102 Rejection Of Independent Claims 1, 7 and 16

Independent claim 22 recites

22. Circuitry for use in a mobile telephone, the circuitry comprising:
a terminal for use with a high-frequency signal;
at least two signal lines;
a switching unit for connecting the terminal to a signal line; and
a primary protection device for protecting against electrostatic discharges, the primary protection device being between the terminal and the switching unit, the primary protection device comprising a first element that diverts all voltages having a pulse height greater than a 200V switching voltage to a reference potential.

We do not understand the applied art to disclose or to suggest at least the underlined features of claim 22 above. As explained on page 2 of the Office Action:

Yrjölä does not teach a primary protection device for protecting against electrostatic discharges, the primary protection device being between the terminal and the switching unit, the primary protection device comprising a first element that diverts all voltages having a pulse height greater than a 200 V switching voltage to a reference potential.

Larson was applied to make up for the foregoing deficiency of Yrjölä vis-à-vis claim 22.

In this regard, the Office Action relies on Fig. 1 and col. 2, lines 6 to 19 of Larson for its alleged disclosure of the foregoing features. Fig. 1 is reproduced below.

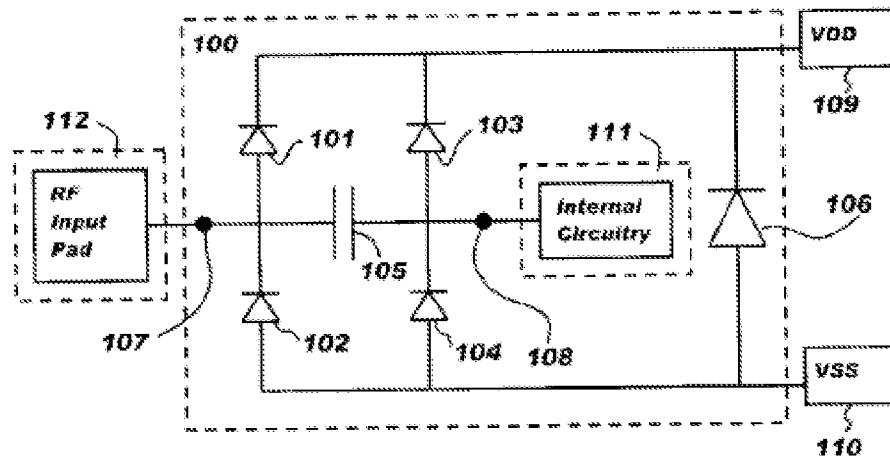


FIG. 1.

As explained in Larson, current is shunted either through PIN diodes 101, 103 or through PIN diodes 102, 104, depending on whether an over-voltage event is highly positive or highly negative. Zener diode 106 acts in response to current through PIN diodes 101, 103, which results in a highly-positive voltage at voltage source 109, to shunt current to negative voltage source 110.

The following excerpts describe the connections of the components in Larson, including the diodes.

Referring first to FIG. 1, a preferred embodiment of the present invention an overvoltage protection device 100 is comprises a first positive voltage PiN diode 101, a second positive voltage PiN diode 103, a first negative voltage PiN diode 102, a second negative voltage PiN diode 104, a capacitor 105, a Zener diode 106, a signal node 107 and an internal circuitry node 108.¹

The first positive PiN diode 101 is electrically connected to the signal node 107 and to a positive voltage source 109...The second positive PiN diode 103 is electrically connected to the internal circuitry node 108 and to the positive voltage source 109... The first negative PiN diode 102 is electrically connected to a negative voltage source 110 and to the signal node 107... The second negative PiN diode 104 is electrically connected to the negative voltage source 110 and to the internal circuitry node 108....²

The following excerpt describes how Larson operates in the event of a highly positive voltage at signal node 107.

The operation of the overvoltage protection device 100 is described next. Within a predetermined range of voltages, the PiN diodes 101, 102, 103, 104 will each be in a reverse bias mode. A highly positive voltage event at the signal node will cause the first positive voltage PiN diode 101 to switch from reverse bias mode to a forward bias mode resulting in most of the current flowing through the first positive voltage PiN diode 101. A smaller portion of the voltage will pass through the capacitor 105 and may cause the second positive voltage PiN diode 103 to switch from reverse bias mode to a forward bias mode resulting in a significant portion of the remaining current flowing through the second positive voltage PiN diode 103...A highly positive voltage at the positive voltage source 109 created by the flow of current through the positive voltage PiN diodes 101 or 103 may cause the Zener diode 106 to "breakdown" and further shunt the positive voltage to the negative voltage source 110. The Zener diode 106 will breakdown when the voltage difference across its terminals is greater than a breakdown voltage of the Zener diode 106. The breakdown voltage should be set above a normal state voltage difference between the positive voltage source 109 and the negative voltage source 110. The negative voltage source 110, acting as a ground, allows the voltage event to dissipate whereby the internal circuitry 111 is substantially protected from a highly positive overvoltage event.³ (emphasis added)

¹ Col. 1, lines 56 to 62

² Col. 3, lines 7 to 28

³ Col. 3, line 48 to col. 4, line 13

The following excerpt describes how Larson operates in the event of a highly negative voltage at signal node 107.

A highly negative voltage event at the signal node 107 will cause the first negative voltage PiN diode 102 to switch from reverse bias mode to a forward bias mode resulting in most of the current flowing through the first negative voltage PiN diode 102. A smaller portion of the voltage will pass through the capacitor 105 and may cause the second negative voltage PiN diode 104 to switch from reverse bias mode to a forward bias mode resulting in a significant portion of the remaining current flowing through the second negative voltage PiN diode 104. Depending upon the magnitude of the highly negative voltage event, the relative size of the negative PiN diodes 102, 104, the rise time of the highly negative voltage event, the amount of the highly negative voltage event that was shunted by the first negative voltage PiN diode 102 and other affecting criteria, the second negative voltage PiN diode 104 may or may not switch to a forward bias mode during a highly negative voltage event. The negative voltage source 110 further allows the voltage event to dissipate whereby the internal circuitry 111 is substantially protected from a highly positive overvoltage event.⁴ (emphasis added)

Thus, Larson describes different elements for protecting against negative and positive high voltage levels. This is different from claim 22, which recites a primary protection device that comprises a first element that diverts all voltages having a pulse height greater than a 200V switching voltage to a reference potential. In response to this argument, the Office Action states:

height greater than a 200V switching voltage to a reference potential. Applicant states that Larson teaches circuitry having different elements for protecting against negative and positive high voltage levels which is different than having a primary protection device that comprises a first element that diverts all voltages having a pulse height greater than a 200V switching voltage to a reference potential. It appears as though Applicant's main argument is that it takes three elements to divert all voltages having a pulse height greater than a 200V switching voltage to a reference potential. However, the three devices that make up the first element of Larson can all be taken together to be a current protection element. A claim is read to be given the broadest reasonable

We note, however, that the crux of our argument is not merely that we have a single "first element", but that the claimed first element diverts all voltages (regardless of polarity) having a pulse height greater than 200V to "a reference potential". That is, all voltages having a pulse height, whether it be positive or negative, are diverted to a reference potential. Since we recite only "a reference potential", that means that all voltage having pulse height that is greater than

⁴ Col. 4, lines 14 to 34

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200V are diverted to the same reference potential. We do not believe Larson to disclose or to suggest this.

More specifically, as explained above with respect to Fig. 1 of Larson above, a highly positive voltage event will cause excess current to flow to VDD 109, whereas a highly negative voltage event will cause excess current to flow to VSS 110. Thus, in Larson, current resulting from high voltages will flow to different potentials (VDD or VSS), not to the same reference potential. By contrast, claim 22 requires that a first element to divert all voltages having a pulse height greater than a 200V switching voltage to a reference potential. This is clearly different from Larson. Accordingly, even if Larson were combined with Yrjöla in the manner suggested in the Office Action, the resulting hypothetical combination would fail to disclose or to suggest all of the features of claim 22. Accordingly, claim 22 is believed to be patentable over the applied art.

The undersigned attorney can be reached at the address shown below. Telephone calls regarding this application should be directed to 617-521-7896.

Please apply any deficiency in fees to deposit account 06-1050, referencing the attorney docket number 14219-079US1.

Respectfully submitted,

February 19, 2010
Date: _____

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